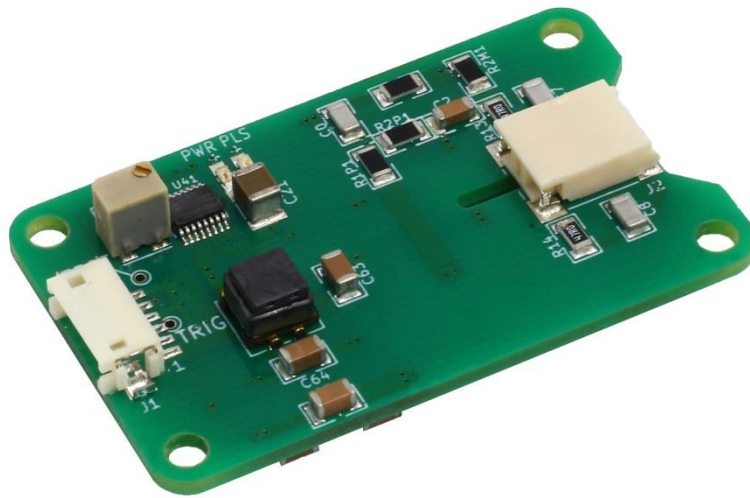


Pockels Cell Driver

STA-PCD-1



USER MANUAL



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Safety

Please read this operation manual carefully before operating the Pockels Cell Driver STA-PCD-1 and pay attention to the safety instructions given here.

For any questions on the product that have not been discussed sufficiently in this manual, contact the manufacturer for complete instructions.

Pay attention that high voltage up to 3800V is used in STA-PCD-1 driver. Improper operation can cause electric shock or harm the driver itself.

Do not place the STA-PCD-1 and high voltage cable on a metal surface when it is powered on. Keep at least 5 mm air gap between the STA-PCD-1 and any of a component and a metal surface. Also keep at least 5 mm air gap between the high voltage cable (see Figure 7) and any of a component and a metal surface.

Do not touch the STA-PCD-1 or high voltage cable when the driver is powered on.

Use proper measurement equipment only for any probing.

Caution: It is forbidden to connect any output of the driver to GND!

Driver description

OEM Pockels Cell Driver STA-PCD-1 provides bipolar pulse output. It may be used for cavity dumping and Q-switching of solid-state sub-nanosecond lasers based on BBO and DKDP crystals.

STA-PCD-1 is a high technology electronic device. It consists of High Voltage Supply, Pulse Generator, High voltage Switch, Control Circuit. The internal structure of STA-PCD-1 is illustrated on Figure 1.

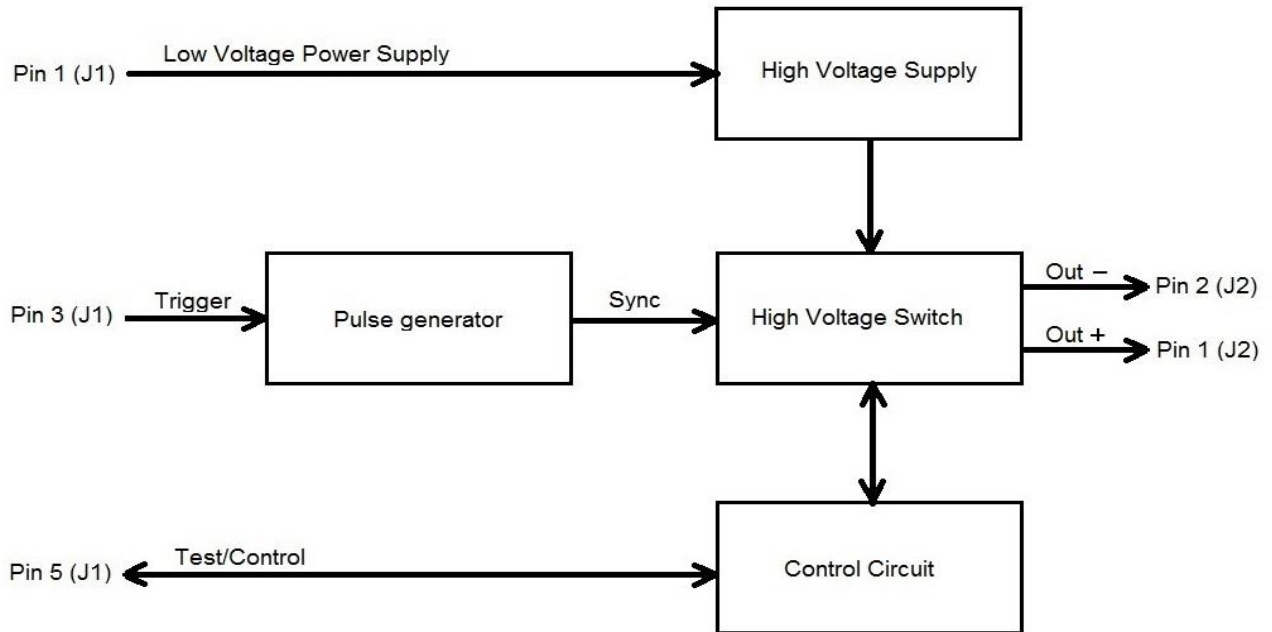


Figure 1 Internal structure of STA-PCD-1.

The High Voltage Supply transforms low voltage supply into approximately 1 kV high voltage. The Low Voltage Power Supply voltage range is from 5 V to 7.5 V (5 V).

Pulse generator transforms input Trigger pulses to very short Sync pulses and provides to a High Voltage Switch.

The Control Circuit allows measuring the low voltage equivalent of the output pulse amplitude, and it provides the output pulse amplitude adjustment by external control voltage.

The High Voltage Switch provides a high voltage bipolar output pulse with very short falling time (see Table1).

To measure the low voltage equivalent of the output pulse amplitude connect voltmeter to the point “TEST” (marked on the PCD-1 driver) and pin6 of J1 (GND). Output pulse high voltage amplitude can be calculated using the equation:

$$V_{out} = V_{meas} * 10500,$$

here V_{meas} is measured voltage at the “TEST” point.

The output pulse high voltage amplitude can be changed by trimmer in the range from 2800 V to 3800 V. The output pulse amplitude also can be varied by external control voltage, which must be provided to pin 5 (J1) and pin 6 (J1).

The waveform diagram of the output pulse is illustrated on Figure 2.

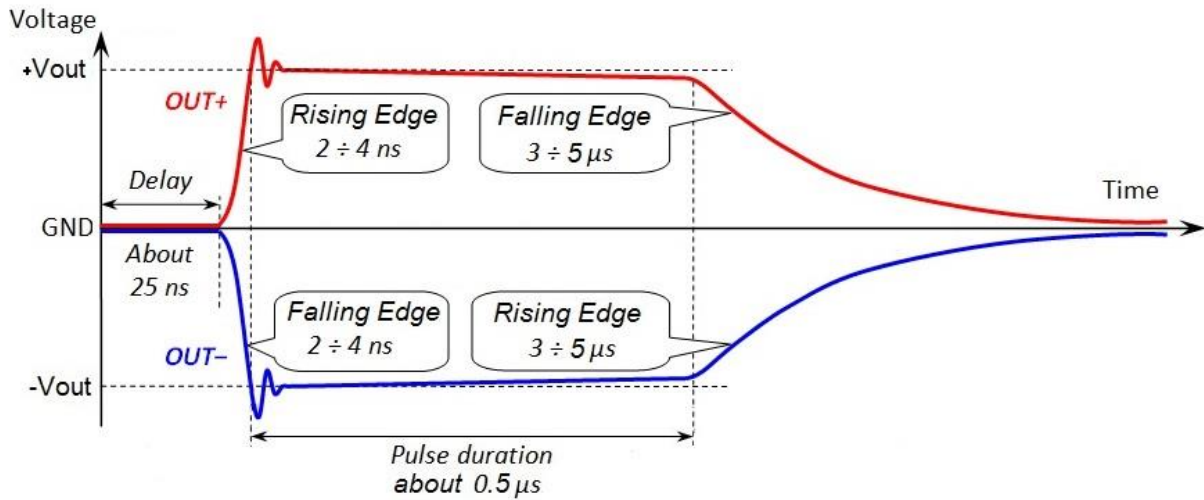


Figure 2 Output Waveform of the Pockels Cell Driver STA-PCD-1.

Operation

Use STANDA cables provided with your driver for proper device operation. Wiring diagram is illustrated in Figure 3.

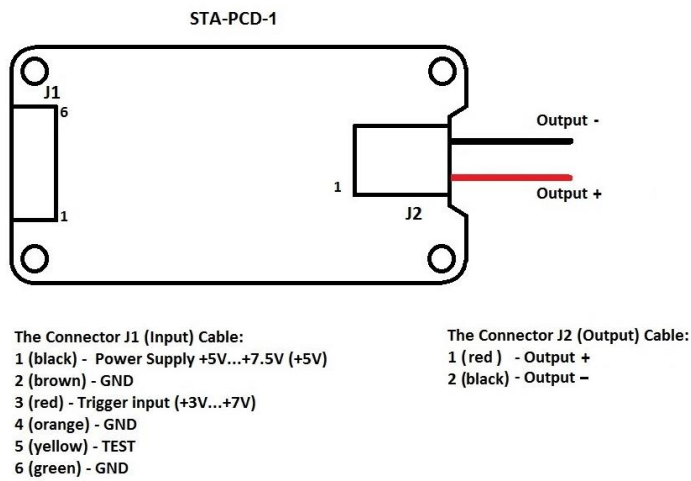


Figure 3 STA-PCD-1 wiring diagram

Connectors of the STA-PCD-1 are illustrated in Figure 4.

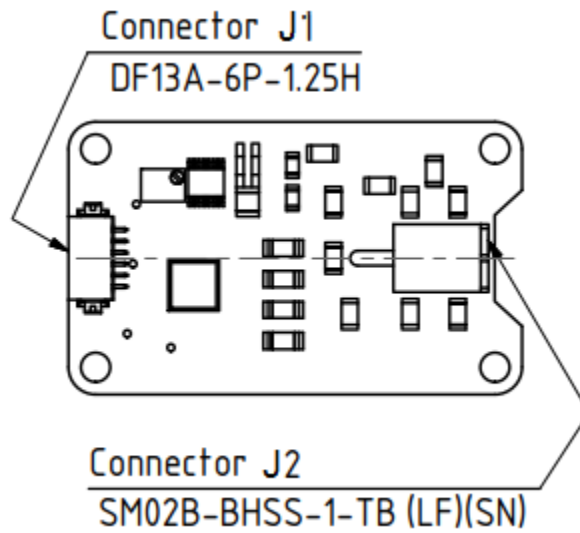


Figure 4 Connectors of the STA-PCD-1

Connect as an accessory included Control cable (see Figure 6) to connector J1 and provide a proper power supply to pin 1(J1) (see Figure 3).

Connect as an accessory included High voltage cable (see Figure 7) to connector J2.

After the driver power ON the shining green LED indicates the presence of high voltage and the driver is waiting for triggering pulses to come. Supplying the proper triggering pulses (table 1) will result to generation of high-voltage output pulses delivered to pin2 (J2) and indicated by shining red LED.

Please take into account, that wires length of the HV cable makes a big influence to the output pulse falling time due to its inductances. Therefore the shorter wires are recommended.

Specifications

Table 1. Specification table

Output voltage amplitude	2800 - 3800 V
HV negative pulse falling time, HV positive pulse rising time ¹	2 ÷ 4 ns
HV pulse duration	~ 0.5 µs
HV negative pulse rising time, HV positive pulse falling time	3 ÷ 5 µs
Max HV pulse repetition rate	2 kHz
Trigger voltage (input impedance is 200 Ohms)	3 ÷ 8 V (+5V)
Output pulse delay vs. trigger pulse	15 ÷ 30 ns
HV pulse jitter	< 200 ps
Max load capacitance	20 pF
External powering requirements:	
Low voltage DC supply	+5V to +7.5V (+5 V)
Operating temperature range	+10 ÷ +40 °C
Dimensions	30 x 50 x 9 mm
Mounting hole pattern (Ø 3.2 mm)	24 x 44 mm

¹ depends on the load inductance and output voltage amplitude.

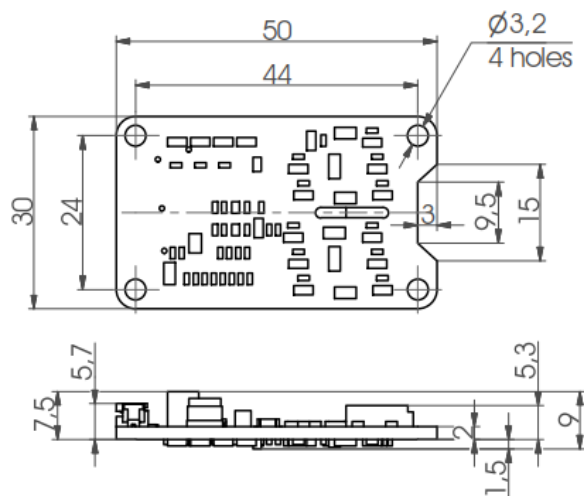


Figure 5. STA-PCD-1 dimensions

Accessories

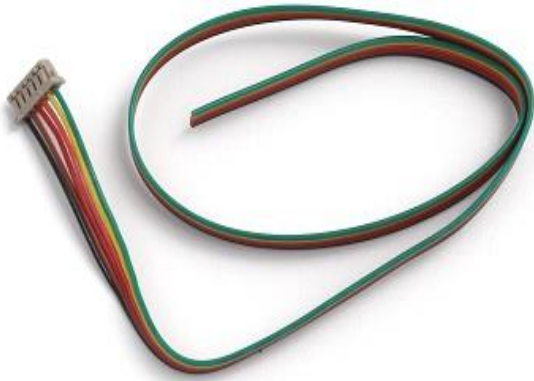


Figure 6. Control cable

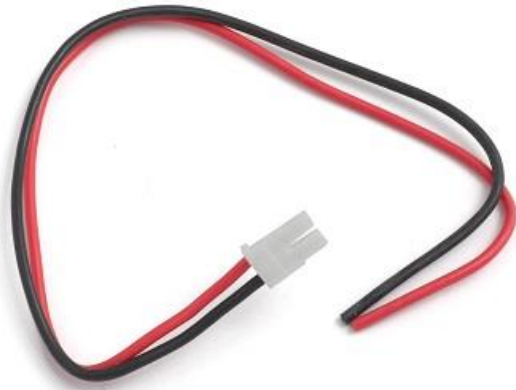


Figure 7. High voltage cable

Warranty

From date of purchase, STANDA offers one-year warranty against defect in material and workmanship with proof of purchase and purchase date. Unauthorized repair, modification or improper use of STA-PCD-1 may void your warranty benefits.